L● 5876964 teacher ●
GPP synthase is a prenyl transfer

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    FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 15:48:38 ON 10 OCT 2001
L1          1130 SEA PLU=ON  (POLYPRENYLTRANSFERASE) OR PRENYLTRANSFERASE OR
                 ((PHYTL OR PRENYL)(3A) TRANSFERASE) OR ((POLYPHYTL OR
POLYPRENY
                 L)(3A) TRANSFERASE) OR PHYTLTRANSFERASE
L2            17 SEA PLU=ON  L1 AND (TOCOPHEROL OR PLASTIQUINONE OR
PRENYLLIPID)

L3             9 DUP REM L2 (8 DUPLICATES REMOVED)
                 D TI 1-9
                 D IBIB AB 1-9

      FILE 'STNGUIDE' ENTERED AT 15:51:37 ON 10 OCT 2001

      FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 16:02:21 ON 10 OCT 2001
L4             3 SEA PLU=ON  (L1 AND PLASTOQUINONE) NOT L2
L5             1 DUP REM L4 (2 DUPLICATES REMOVED)
                 D IBIB AB

L6             7 SEA PLU=ON  L1 AND TRANSGENIC
L7             5 DUP REM L6 (2 DUPLICATES REMOVED)
L8             4 SEA PLU=ON  L7 NOT (L2 OR L4)
                 D TI 1-4
                 D IBIB AB 1-4

     FILE 'STNGUIDE' ENTERED AT 16:08:30 ON 10 OCT 2001

     FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 16:10:11 ON 10 OCT 2001

     FILE 'STNGUIDE' ENTERED AT 16:10:15 ON 10 OCT 2001

     FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 16:10:19 ON 10 OCT 2001
           D KWIC 2

     FILE 'STNGUIDE' ENTERED AT 16:10:26 ON 10 OCT 2001

     FILE 'AGRICOLA, BIOSIS, CAPLUS' ENTERED AT 16:12:47 ON 10 OCT 2001
L9            21 SEA PLU=ON  (CHLOROPHYLL SYNTHASE) OR (BACTERIOCHLORYPHYLL
                 SYNTHASE)
L10            0 SEA PLU=ON  L9 AND TRANSGENIC
L11            6 SEA PLU=ON  L9 AND TRANSFORM?
L12            4 DUP REM L11 (2 DUPLICATES REMOVED)
                 D TI 1-4

     FILE 'STNGUIDE' ENTERED AT 16:13:45 ON 10 OCT 2001

     FILE 'BIOSIS, CAPLUS' ENTERED AT 16:17:56 ON 10 OCT 2001
           D IBIB AB 1-4

     FILE 'STNGUIDE' ENTERED AT 16:17:58 ON 10 OCT 2001

     FILE 'AGRICOLA, BIOSIS, CAPLUS' ENTERED AT 16:30:51 ON 10 OCT 2001
L13           67 SEA PLU=ON  L1 AND TRANSFORM?
L14           44 DUP REM L13 (23 DUPLICATES REMOVED)
L15           42 SEA PLU=ON  L14 NOT (L2 OR L3 OR L4 OR L5 OR L6 OR L7 OR L8
OR
                 L9)
                 D TI 1-42
L16            8 SEA PLU=ON  L15 AND (PLANT OR TOBACCO OR SOYBEAN OR GLYCINE
OR
                 ZEA OR ARABIDOPSIS OR BRASSICA)
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                D IBIB AB 1-8

      FILE 'STNGUIDE' ENTERED AT 16:35:55 ON 10 OCT 2001

      FILE 'AGRICOLA, BIOSIS, CAPLUS' ENTERED AT 16:48:26 ON 10 OCT 2001
                D IBIB AB L15 9

      FILE 'STNGUIDE' ENTERED AT 16:48:26 ON 10 OCT 2001

      FILE 'AGRICOLA, BIOSIS, CAPLUS' ENTERED AT 16:50:47 ON 10 OCT 2001
L17               1 SEA PLU=ON  L1 AND TRANSGENE
                    D TI
                    D IBIB AB
L18               0 SEA PLU=ON  L1 (4A)(INSERT?)
L19              16 SEA PLU=ON  L1 AND INSERT?
L20              15 SEA PLU=ON  L19 NOT (L2 OR L4 OR L6 OR L7 OR L12 OR L16)
L21               9 DUP REM L20 (6 DUPLICATES REMOVED)
                    D TI 1-9
                    D IBIB AB 3
                    D IBIB AB 8

      FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 16:56:45 ON 10 OCT 2001
L22            5423 SEA PLU=ON  (REF OR (RUBBER ELONGATION FACTOR)) AND
TRANSGENIC

L23               1 SEA PLU=ON  ((RUBBER ELONGATION FACTOR)) AND TRANSGENIC
                    D IBIB AB

      FILE 'STNGUIDE' ENTERED AT 16:59:29 ON 10 OCT 2001
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L Number	Hits	Search Text	DB	Time stamp
1	171	polyprenyltransferase prenyltransferase ((phytl or prenyl) adj3 transferase) ((polyphytl or prenyl) adj3 transferase) phytltransferase	USPAT; US-PGPUB	2001/10/10 17:11
2	13	(polyprenyltransferase prenyltransferase ((phytl or prenyl) adj3 transferase) ((polyphytl or prenyl) adj3 transferase) phytltransferase) and (tocopherol plastoquinone prenyllipid)	USPAT; US-PGPUB	2001/10/10 17:05
3	47	(polyprenyltransferase prenyltransferase ((phytl or prenyl) adj3 transferase) ((polyphytl or prenyl) adj3 transferase) phytltransferase) and transgenic	USPAT; US-PGPUB	2001/10/10 17:35
4	134	geranylgeranyl and transgenic	USPAT; US-PGPUB	2001/10/10 17:35
5	90	(geranylgeranyl and transgenic) not ((polyprenyltransferase prenyltransferase ((phytl or prenyl) adj3 transferase) ((polyphytl or prenyl) adj3 transferase) phytltransferase) and transgenic)	USPAT; US-PGPUB	2001/10/10 17:35
7	2	(geranylgeranyl near3 transferase) and (transgenic near3 plant)	USPAT; US-PGPUB	2001/10/10 17:38
6	83	(geranylgeranyl near3 transferase) and transgenic	USPAT; US-PGPUB	2001/10/10 17:37
8	37	((geranyl geranylgeranyl) near3 (transferase synthase)) and transgenic and plant	USPAT; US-PGPUB	2001/10/10 17:38
9	9	(((geranyl geranylgeranyl) near3 (transferase synthase)) and transgenic and plant) not (polyprenyltransferase prenyltransferase ((phytl or prenyl) adj3 transferase) ((polyphytl or prenyl) adj3 transferase) phytltransferase)	USPAT; US-PGPUB	2001/10/10 17:39

L3 ANSWER 13 OF 19 AGRICOLA
ACCESSION NUMBER: 1998:49731 AGRICOLA
DOCUMENT NUMBER: IND21379164
TITLE: Drought- and wound-induced expression in leaves of a gene encoding a chromoplast carotenoid-associated protein.
AUTHOR(S): Chen, H.C.; Klein, A.; Xiang, M.; Backhaus, R.A.; Kuntz, M.
AVAILABILITY: DNAL (QK710.P68)
SOURCE: The Plant journal : for cell and molecular biology, May 1998. Vol. 14, No. 3. p. 317-326
Publisher: Oxford : Blackwell Sciences Ltd.
ISSN: 0960-7412
NOTE: Includes references
PUB. COUNTRY: England; United Kingdom
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English

AB A study has been carried out to investigate the regulation of the fibrillin (fib) gene, along with two carotenoid biosynthesis genes, namely those encoding **geranylgeranyl** pyrophosphate **synthase** (ggpps) and capsanthin-capsorubin synthase (ccs) from bell pepper (Capsicum annuum), whose expression is greatly induced during fruit ripening. A homologous transient expression assay has shown that high expression of these genes in pepper fruit is regulated essentially at the transcriptional level. Transcription of ccs is mainly fruit-specific and that of ggpps is highly induced in fruits. Expression of fib is more complex: it is induced not only by a developmental process in fruits but also, in pepper and tobacco leaves, by diverse environmental factors such as drought and mechanical wounding. The wound-induced transcriptional activation of fib is light- and oxygen-dependent. Evidence is provided for the involvement of superoxide anion production within plastids in the signalling pathway leading to induction of this nuclear gene by environmental stresses. Specific activation of this promoter in roots, but not in leaves, was also observed upon exogenous abscisic acid treatment. Drought or wounding also leads to the accumulation of the fibrillin polypeptide in leaves. Furthermore, a low level of fibrillin has also been detected in the leaves of non-stressed plants. Taken together, our data suggest a general role for fibrillin in various plastid types and in response to environmental stresses, in addition to its function in assembly of carotenoid-containing fibrils in chromoplasts.

AGRICOLA
ACCESSION NUMBER: 1998:38698 AGRICOLA
DOCUMENT NUMBER: IND20907079
TITLE: **Geranylgeranyl** pyrophosphate **synthase** encoded by the newly isolated gene GGPS6 from Arabidopsis thaliana is localized in mitochondria.
AUTHOR(S): Zhu, X.F.; Suzuki, K.; Saito, T.; Okada, K.; Tanaka, K.; Nakagawa, T.; Matsuda, H.; Kawamukai, M.
AVAILABILITY: DNAL (QK710.P62)
SOURCE: Plant molecular biology, Oct 1997. Vol. 35, No. 3. p. 331-341
Publisher: Dordrecht : Kluwer Academic Publishers.
CODEN: PMBIDB; ISSN: 0167-4412
NOTE: Includes references
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English
AB We have cloned a new **geranylgeranyl** pyrophosphate (GGPP) **synthase** gene, designated GGPS6, from Arabidopsis thaliana genomic DNA. Nucleotide sequence analysis revealed that the GGPS6 gene contains an open reading frame coding for a protein of 343 amino acid residues with a calculated molecular mass of 37 507 Da. Also, the gene is not interrupted by an intron. The predicted amino acid sequence of the GGPS6 gene shows significant homology (34.0-57.7%) with other GGPP synthases from Arabidopsis. The GGPS6 protein contains a N-terminal signal peptide which is thought to function as an organelle targeting sequence. In fact, the GGPS6-GFP fusion protein was found to be localized exclusively in mitochondria when expressed in tobacco BY-2 cells. In vitro analysis of the enzyme activity as well as genetic complementation analysis with Escherichia uredovora crt gene cluster expressed in Escherichia coli showed that the GGPS6 gene most certainly encodes a GGPP synthase catalyzing the conversion of farnesyl pyrophosphate to GGPP.

L3 ANSWER 1 OF 9 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 1

ACCESSION NUMBER: 2001:445708 CAPLUS

TITLE: A novel phytyltransferase from Synechocystis sp. PCC 6803 involved in **tocopherol** biosynthesis

AUTHOR(S): Schledz, M.; Seidler, A.; Beyer, P.; Neuhaus, G.

CORPORATE SOURCE: Greenovation Pflanzenbiotechnologie GmBH, Freiburg, D-79111, Germany

SOURCE: FEBS Lett. (2001), 499(1,2), 15-20
CODEN: FEBLAL; ISSN: 0014-5793

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The deduced polypeptide sequence of open reading frame slr1736 reveals homol. to chlorophyll synthase and 1,4-dihydroxy-2-naphthoic acid phytyltransferase in Synechocystis sp. strain PCC 6803. In **tocopherol** and plastoquinone biosynthesis, a condensation reaction mechanistically similar to that of these two enzymes is performed. To analyze the function of this novel **prenyltransferase**, a deletion mutant of slr1736 was generated by homologous recombination. The mutant showed a markedly decreased **tocopherol** content, while plastoquinone levels remained unchanged. Since the arom. precursor homogentisic acid accumulated in the mutant, the function of the enzyme was proven to be a novel **tocopherol** phytyltransferase.

L23 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:492653 CAPLUS
DOCUMENT NUMBER: 132:9462
TITLE: Genetic transformation of Nicotiana tabacum with the **rubber elongation factor** (ref) gene from Hevea brasiliensis
AUTHOR(S): Attanayaka, D. P. S. T. G.; Kekwick, R. G. O.; Lawrence, M. J.; Franklin, F. C. H.
CORPORATE SOURCE: Rubber Research Institute, Agalawatta, Sri Lanka
SOURCE: J. Plant. Crops (1998), 26(2), 115-119
CODEN: JPCRDW; ISSN: 0304-5242
PUBLISHER: Indian Society for Plantation Crops
DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Rubber elongation factor** is an important protein found in the specialized laticifers of Hevea brasiliensis where it is involved in the polymn. of isoprene monomer to form high mol. wt. cis polyisoprene. We have cloned the cDNA encoding REF protein in the plant transformation vector .DELTA.pBI 121.1, a deriv. of the pBI 121.1. Orientation of the ref gene with respect to the CaMV 35S promoter of the recombinant .DELTA.pBI 121 plasmids was detd. Two constructs contg. the ref gene in sense and antisense orientations were used to transform Nicotiana tabacum using Agrobacterium tumefaciens. Integration of the ref gene into the Nicotiana genome was confirmed by Southern anal. of genomic DNAs of the transformants. This indicated that there was variation in the copy no. and integration site of the ref gene in the **transgenic** plants. Northern anal. of the total RNA extd. from the leaves of plants transformed with a sense copy of the ref gene revealed that the transgene was expressed and produced a transcript of the expected size. Plants transformed with an antisense copy of ref gene showed no such expression.

REFERENCE COUNT: 12
REFERENCE(S):

(4) Chen, Z; Clinical and Experimental Allergy 1996, V26, P406 CAPLUS
(5) Cornish, K; J Biochem 1993, V218, P267 CAPLUS
(7) Dellaporta, S; Plant Mol Biol Rep 1983, V1, P19 CAPLUS
(8) Dennis, M; Biol Chem 1989, V264, P18618 CAPLUS
(9) Goyvaerts, E; Plant Physiol 1991, V97, P317 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1992:100401 CAPLUS
DOCUMENT NUMBER: 116:100401
TITLE: Molecular cloning and nucleotide sequencing of the rubber elongation factor gene from Hevea brasiliensis
AUTHOR(S): Attanyaka, D. P. S. T. G.; Kekwick, R. G. O.; Franklin, F. C. H.
CORPORATE SOURCE: Sch. Biol. Sci., Univ. Birmingham, Birmingham, B15 2TT, UK
SOURCE: Plant Mol. Biol. (1991), 16(6), 1079-81
CODEN: PMBIDB; ISSN: 0167-4412
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The larger rubber particles of latex of diam. 0.1 .mu.m which are active in rubber biosynthesis in vitro are surrounded by a half-unit lipid membrane, which contains a predominant 14.5 kDa polypeptide termed the rubber elongation factor (REF). This polypeptide interacts with the sol. cytoplasmic farnesyl diphosphate-forming **prenyl transferase** to give a complex forming a cis-polyisoprenoid chain commencing with a trans oligomer at the .omega. terminus. The amino acid sequence of the REF has been detd. by M.S. Dennis et al. (1989). The present report concerns the cloning and sequencing of the gene encoding the REF found in a cDNA library derived from the mRNA of the polysomes exuded in Hevea latex. A single clone with an **insert** size of about 730 bp was identified. The cloned fragment was amplified by polymerase chain reaction (PCR) using primers derived from the .lambda.gt11 sequence adjacent to the cloning site. The primers also contained a BamHI recognition site which facilitated the cloning of the PCR product into the BamHI site of pBluescript SK+ to produce pREF1. Nucleotide sequencing of pREF1 revealed the cDNA **insert** to be 681 bp in length. The clone encodes the entire coding region of the mature REF. An ATG initiation codon is located immediately upstream of the GCT, which encodes the amino terminal Ala of the mature peptide. A further 38 nucleotides are located upstream of the ATG. The coding region is followed by a 3' untranslated region of 221 bp. A putative polyadenylation signal (AATAAA) is located 170 nucleotides downstream of the stop codon.